REMARKS

I. Amendments to the claims:

We propose to amend independent claims 1, 9, 14 and 25.

We believe these new claims define the invention that Applicant seeks to protect in a clearer way than the original claims.

Amended claim 1 regroups all the technical features of claim 1 and claim 2.

As a consequence, claim 2 has been cancelled and claims 3 and 4 now refer to claim 1.

Amended claim 9 regroups all the technical features of claim 9 and claim 10.

As a consequence, claim 10 has been cancelled and claims 11 and 12 now refer to claim 1.

Amended claim 14 regroups all the technical features of claim 21, claim 22 and claim 23.

As a consequence, claims 21-23 have been cancelled. Further, claim 24 has been cancelled.

In claim 16, the wording "the detector" has been replaced by "the gamma-ray detector".

Amended claim 25 regroups all the technical features of claim 27. As a consequence, claim 27 has been cancelled. Further, in claim 25, the wording "a detector" has been replaced by "a gamma-ray detector".

For sake of clarity, amendments to the claims are reflected in the enclosed listing of claims.

II. Amendment to the description:

We propose to amend the abstract in accordance with the suggestion made by the Examiner, namely an abstract of increased length.

III. Claims 1-8 rejections:

The Examiner rejected claims 1-4 and 6-8 under 35 USC 103(a) as being unpatentable over Jones (US 3,767,921) in view of Plasek (US 5,459,314). Further, the Examiner rejected claim 5 under 35 USC 103(a) as being unpatentable over Jones (US 3,767,921) in view of Plasek (US 5,459,314) and further in view of Minette (US 5,397,893).

We respectfully disagree with the Examiner's reasoning that forms the basis of these rejections.

Jones teaches a gamma-ray spectroscopy well logging system. Jones is interested in controlling the gain of gamma ray energy measurement device. Jones describes a gain control apparatus which corrects for non-linearities introduced by a well logging cable, a detector, or electronics of the gamma ray energy measurement device. The gain of an amplifier of the gamma ray energy measurement device is automatically controlled by using as a reference a ratio of counting rates from two or more energy regions in the gamma-ray spectrum. In particular, the energy windows utilized for gain control includes several peaks characteristic of iron gamma rays (see col. 5 lines 21-58). As indicated by Jones, the casing which contains iron provides these several peaks.

Thus, it clearly appears that Jones does not describe or suggest a method for stabilizing a gain of a gamma-ray detector that process a backscatter peak of a full gamma spectrum such that the backscatter peak constitutes a reference peak in order to stabilize the gain of the gamma-ray detector.

Plasek teaches a subsurface earth formation density measuring method. Plasek is interested in correcting the density measurements which may be disturbed by natural gamma-rays emanating from the subsurface earth formation and by gamma-rays induced by neutron emitted by nuclear sources of a density measuring tool. Plasek teaches the use of a Cesium 137 source as a detector gain stabilization source.

Thus, it clearly appears that Plasek does not describe or suggest a method for stabilizing a gain of a gamma-ray detector that process a backscatter peak of a full gamma spectrum such that the backscatter peak constitutes a reference peak in order to stabilize the gain of the gamma-ray detector.

Minette teaches an apparatus and method for measuring subsurface earth formation density using gamma-rays. Minette is interested in improving density measurements by taking into account backscattering of gamma-rays through the apparatus and the presence of drilling mud in the measurement area. Minette describes an apparatus comprising a small threaded radioactive source threadably received onto apparatus housing. A Cesium monitor peak allows for the tracking of the gain changes, and compensation for the gain change.

Thus, it clearly appears that Minette does not describe or suggest a method for stabilizing a gain of a gamma-ray detector that process a backscatter peak of a full gamma spectrum such

that the backscatter peak constitutes a reference peak in order to stabilize the gain of the gamma-ray detector.

It is respectfully submitted that independent claim 1, as amended, would not have been obvious to a person of ordinary skill in the art of over the teachings of Plasek, Jones, Minette taken alone or in combination. Indeed, these references taken alone or in combination do not disclose, suggest, teach or motivate the skilled person to obviously derive the features of independent claim 1, as amended. In contradistinction with the present invention which aims at not requiring a calibration source or a specific environment such as a casing, Plasek teaches to use energy windows for gain control including several peaks characteristic of iron gamma rays (iron from the casing), Jones teaches to use a Cesium 137 source as a detector gain stabilization source and Minette teaches to monitor Cesium peak of a source received onto apparatus housing for the tracking of the gain changes. Hence, a person of ordinary skill in the art would have put aside these references at the time the invention was made.
Thus, independent claim 1 and dependent claims 2-8 are inventive in view of the hereinbefore cited references taken alone or in combination.

As a conclusion, claim 1 is allowable over the prior art and dependent claims 2-8 are allowable for at least the same reasons.

IV. Claims 9-13 rejections:

The Examiner rejected claims 9-11 under 35 USC 103(a) as being unpatentable over Jones (US 3,767,921) in view of Plasek (US 5,459,314). Further, the Examiner rejected claims 12 and 13 under 35 USC 103(a) as being unpatentable over Jones (US 3,767,921) in view of Plasek (US 5,459,314) and further in view of Minette (US 5,397,893).
We respectfully disagree with the Examiner's reasoning that forms the basis of these rejections.

It clearly appears that neither Plasek, nor Jones, nor Minette describe or suggest a system for stabilizing a gain of a gamma-ray detector comprising discriminating means allowing to compare the energy of the detected gamma-rays to at least three regulation thresholds, the three regulation thresholds being located in an energy neighborhood of a backscatter peak of a full gamma spectrum, the backscatter peak constituting a reference peak.

It is respectfully submitted that independent claim 9, as amended, would not have been obvious to a person of ordinary skill in the art of over the teachings of Plasek, Jones, Minette taken alone or combined. Indeed, these references taken alone or in combination do not disclose, suggest, teach or motivate the skilled person to obviously derive the features of independent claim 9, as amended. In contradistinction with the present invention which aims at not requiring a calibration source or a specific environment such as a casing, Plasek teaches to use energy windows for gain control including several peaks characteristic of iron gamma rays (iron from the casing), Jones teaches to use a Cesium 137 source as a detector gain stabilization source and Minette teaches to monitor Cesium peak of a source received onto apparatus housing for the tracking of the gain changes. Hence, a person of ordinary skill in the art would have put aside these references at the time the invention was made.
Thus, independent claim 9 and dependent claims 10-13 are inventive in view of the hereinbefore cited references taken alone or in combination.

As a conclusion, claim 9 is allowable over the prior art and dependent claims 10-13 are allowable for at least the same reasons.

V. Claims 14-24 rejections:

The Examiner rejected claims 14-18 and 21 under 35 USC 102(b) as being anticipated by Plasek (US 5,459,314). Further, the Examiner rejected claims 19 and 20 under 35 USC 103(a) as being unpatentable over Plasek (US 5,459,314) in view of Minette (US 5,397,893). Furthermore, the Examiner rejected claims 22-24 under 35 USC 103(a) as being unpatentable over Plasek (US 5,459,314) in view of Jones (US 3,767,921).
We respectfully disagree with the Examiner's reasoning that forms the basis of these rejections.

It clearly appears that neither Plasek, nor Jones, nor Minette describe or suggest a method for evaluating a natural gamma-ray activity within a borehole comprising stabilizing a gain of a gamma-ray detector by processing a backscatter peak of a full gamma spectrum such that the backscatter peak constitutes a reference peak.
Consequently, it is respectfully submitted that independent claim 14, as amended, would not have been anticipated by Plasek. Hence, dependent claims 15-24 would also not have been anticipated by Plasek.

It is respectfully submitted that independent claim 14, as amended, would not have been obvious to a person of ordinary skill in the art of over the teachings of Plasek, Jones, Minette taken alone or combined. Indeed, these references taken alone or in combination do not disclose, suggest, teach or motivate the skilled person to obviously derive the features of independent claim 14, as amended. In contradistinction with the present invention which aims at not requiring a calibration source or a specific environment such as a casing, Plasek teaches to use energy windows for gain control including several peaks characteristic of iron gamma rays (iron from the casing), Jones teaches to use a Cesium 137 source as a detector gain stabilization source and Minette teaches to monitor Cesium peak of a source received onto apparatus housing for the tracking of the gain changes. Hence, a person of ordinary skill in the art would have put aside these references at the time the invention was made.
Thus, independent claim 14 and dependent claims 15-24 are inventive in view of the hereinbefore cited references taken alone or in combination.

As a conclusion, claim 14 is allowable over the prior art and dependent claims 15-24 are allowable for at least the same reasons.

VI. Claims 25-32 rejections:

The Examiner rejected claims 25 and 28 under 35 USC 102(b) as being anticipated by Jones (US 3,767,921). Further, the Examiner rejected claims 26 and 27 under 35 USC 103(a) as being unpatentable over Jones (US 3,767,921) in view of Plasek (US 5,459,314). Furthermore, the Examiner rejected claims 29 and 30 under 35 USC 103(a) as being unpatentable over Jones (US 3,767,921) in view of Plasek (US 5,459,314) and further in view of Minette (US 5,397,893). Finally, the Examiner rejected claims 31 and 32 under 35 USC 103(a) as being unpatentable over Jones (US 3,767,921) in view of Jones et al. (US 6,666,285).
We respectfully disagree with the Examiner's reasoning that forms the basis of these rejections.

Jones et al. teach an apparatus and method for measuring density while drilling. Jones et al. is interested in optimizing the apparatus dimension, maximizing shielding and collimation efficieny. Jones et al. is totally silent about detector gain control issues.

It clearly appears that neither Plasek, nor Jones, nor Minette, nor Jones et al. describe or suggest a system for evaluating a natural gamma-ray activity within a borehole comprising at least one discriminator allowing to determine and compare a first rate and a second rate respectively associated with a first predetermined energy interval and a second predetermined energy interval straddling a backscatter peak of a full gamma spectrum, the backscatter peak constituting a reference peak.

Consequently, it is respectfully submitted that independent claim 25, as amended, would not have been anticipated by Jones. Hence, dependent claims 26-32 would also not have been anticipated by Jones.

It is respectfully submitted that independent claim 25, as amended, would not have been obvious to a person of ordinary skill in the art of over the teachings of Plasek, Jones, Minette, Jones et al. taken alone or combined. Indeed, these references taken alone or in combination do not disclose, suggest, teach or motivate the skilled person to obviously derive the features of independent claim 25, as amended. In contradistinction with the present invention which aims at not requiring a calibration source or a specific environment such as a casing, Plasek teaches to use energy windows for gain control including several peaks characteristic of iron gamma rays (iron from the casing), Jones teaches to use a Cesium 137 source as a detector gain stabilization source and Minette teaches to monitor Cesium peak of a source received onto apparatus housing for the tracking of the gain changes. Further, Jones et al. is totally silent about gain stabilization of the gamma-ray detector. Hence, a person of ordinary skill in the art would have put aside these references at the time the invention was made.

Thus, independent claim 25 and dependent claims 26-32 are inventive in view of the hereinbefore cited references taken alone or in combination.

As a conclusion, claim 25 is allowable over the prior art and dependent claims 26-32 are allowable for at least the same reasons.

CONCLUSION

Applicant is of the opinion that the Examiner's objections to the claims and the description have been overcome by the amendments made and filed herewith.

The application is now deemed to be in condition for allowance, and notice to that effect is solicited. If any fees are due in this case, please charge Deposit Account 50-2183.

The Examiner is invited to contact the undersigned patent attorney at 281.285.4562 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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Victor H. Segura
Registration No. 44,329

Schlumberger Oilfield Services
200 Gillingham Lane, MD-9
Sugar Land, TX 77478
Attorney for Applicants